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JUL 17 1992

Sta. 21 (20)

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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1	WHC-SD-EN-AP-100		0	618-9 Burial Ground Cylinder Venting Plan	3ES	1,2		

JUL 1992 RECEIVED EDMC

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledged

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1	1	Cog.Eng.J.M. Frain	J.M. Frain	7/7/92	H4-55	H.C. Boynton	H.C. Boynton	7-15-92		1	1
1	1	Cog. Mgr. G.C. Hencket	G.C. Hencket	7/7/92		~~P.R. Bunter~~	NA	7-15-92			
1	1	QA R.W. Perusse	R.W. Perusse	7-16-92		~~B.J. Hobbs~~	NA	7-15-92			
1	1	Safety D.J. Hart	D.J. Hart			M.M. McCarthy	M.M. McCarthy	7-15-92	H3-13	1	1
1	1	Env. EM Greager	E.M. Greager	7/16/92		Central Files			L8-04	3	
1	1	M. R. Romsos				EDMC (2)			H4-22	3	
1	1	D. J. Alexander	D.J. Alexander			IRA Clearance			H4-17	3	

18.	19.	20.	21. DOE APPROVAL (if required) Ltr. No.
J.M. Frain 7/7/92 Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	G.C. Hencket 7/7/92 Cognizant/Project Engineer's Manager / Date	[] Approved [] Approved w/comments [] Disapproved w/comments

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INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

Complete for all Types of Release

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- [ ] Speech or Presentation (Check only one suffix)
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- [ ] Software/Database
- [ ] Controlled Document
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ID Number (include revision, volume, etc.): WHC-SD-EN-AP-100, Rev. 0

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618-9 Burial Ground Cylinder Venting Plan

Unclassified Category: UC-

Impact Level: 3S

New or novel (patentable) subject matter? [X] No [ ] Yes
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Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed) / Signature / Date
Classification/Unclassified Controlled Nuclear Information	[ ]	[X]	
Patent - General Counsel	[X]	[ ]	SW BERGLIN SW Berglin 7/9/92
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Information conforms to all applicable requirements. The above information is certified to be correct.

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Transmit to DOE-HQ/Office of Scientific and Technical Information	[ ]	[X]

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Intended Audience: ~~[X]~~ Internal ~~[X]~~ Sponsor [X] External

Responsible Manager (Printed/Signature): G.C. HENCKEL Date: 7/7/92

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APPROVED FOR RELEASE OFFICIAL DOCUMENT U.O. Date 7/16/92

Date Cancelled | Date Disapproved

SUPPORTING DOCUMENT

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2. Title	3. Number	4. Rev No.
618-9 Burial Ground Cylinder Venting Plan	WHC-SD-EN-AP-100	0

5. Key Words

Safety, protective, compressed gas, excavation, corrosion

APPROVED FOR PUBLIC RELEASE
V. Birkland 7/16/92

6. Author 7/16/92
Name: for J.M. Frain

Signature

Organization/Charge Code 81223/PC4AA

7. Abstract

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9. Impact Level 3ES

10. RELEASE STAMP

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DATE JUL 17 1992
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CONTENTS

A. APPLICABILITY

This plan applies to the venting of an abandoned compressed gas cylinder by the Westinghouse Hanford Company (Westinghouse Hanford) and the Richland Police Bomb Disposal Unit (Bomb Unit). The cylinder was discovered during the excavation of debris during the expedited response action at the 618-9 Burial Ground. Although the contents of the cylinder are unknown, it is suspected that the cylinder is empty. Because of excessive corrosion, the protective cap that covers the valve system cannot be removed, rendering the valve system physically inaccessible. The valve fittings on the cylinder appear to be consistent with the fittings used on oxygen cylinders. This plan covers preparation, detonation of cylinder cap and valve assembly (by controlled explosion), emergency action, and disposal of the cylinder.

At the Demolition Site (the 618-9 Burial Ground), the cylinder has been buried vertically in sand up to the protective cap. The visible area of the protective cap is in a shallow sand depression, approximately 3 feet below grade. The Detonation Team will vent the cylinder by removing the protective cap and valve assembly with plastic explosives. The Detonation Team will fill the protective cap with plastic explosives through the cap's side vents. Ample explosives will be used to completely destroy the cylinder valves and vent any remaining gas. To reduce the risk to noninvolved site workers, detonation activities will occur on swing shift or graveyard shift.

B. SITE DESCRIPTION

Location:	618-9 Burial Ground
Hazards:	An uncontrolled explosion, metal fragmentation, fire, or exposure to poisonous, or flammable chemicals during the disposal operation.
Surrounding population:	The closest facility to the site of detonation is about 1/2 mile to the east (In-Situ Vitrification Site, 300 Area).
Site conditions:	Loose soil, dry underbrush, cold/heat exposure, and nuisance dusts.
Weather conditions:	Detonations may occur during all weather conditions except electrical storms and high winds (winds gusting to greater than 30 mph) during the fire season. It is recommended that the wind direction be northerly. If dark, the Hanford Fire Department will provide necessary lighting.

C. ONSITE ORGANIZATION AND COORDINATION

The following personnel shall carry out the listed job functions onsite. (Note: one person may carry out more than one job function.)

Emergency Coordinator:	Mike Romsos
Address (office)	WNP-1,TR-57/217/600
Phone (office)	(509) 376-4900
Two-Way Radio/Pager	P-23/85-8295
Project Team Leader:	Mike Romsos (Solid Waste Engineering)
Site Safety Officer:	Peggy McCarthy Deb Alexander, technical support (Industrial Health and Safety)
Security Officer:	Hanford Patrol representative
Blaster In Charge:	Senior member of detonation team
Record Keeper:	Clay Hawkes
Field Team Leader:	Mike Romsos
Detonation Team:	Gerome Delvin (Richland Police Bomb Disposal Unit [RPD]) Lt. Mark Panther (alternate RPD) Mike Romsos
Rescue Teams:	Hanford Fire Department and the ambulance crew

D. ONSITE CONTROL

Access

Hanford Patrol is responsible for the following:

- Coordinate access control and security onsite (excluding security clearance arrangements)
- Maintaining a safe perimeter before detonation activities
- Regulate vehicle access to the Demolition Site
- Escort unauthorized persons off the Demolition Site (Figure 1).

Staging Areas

The Project Team Leader determines the location of the onsite command post and staging area (Figure 1). The command post will be moved if wind direction places the command post down-wind of the detonation pit.

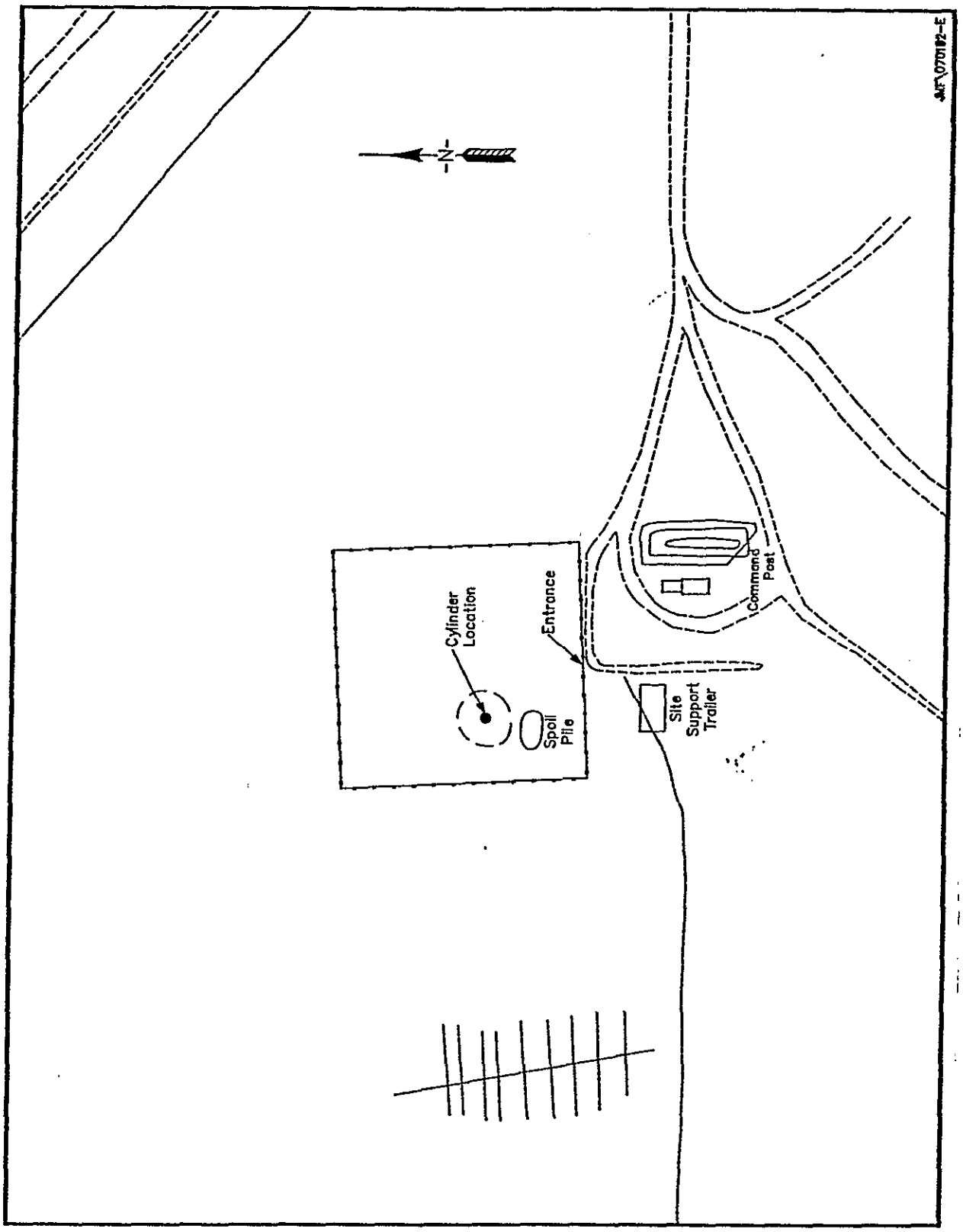

Figure 1. Demolition Site Map.

Boundaries

The following zones are used:

- Exclusion zone - The area within the burial ground fence
- Support zone - The area beyond the exclusion zone.

Detonation

The detonation team shall:

- Keep electrical blasting caps shunted and separate from the blast circuit as long as possible
- Keep the electrical circuit shunted until detonation
- Allow no one to enter the exclusion zone until the explosion cloud has dissipated (unless emergency conditions require immediate action)

NOTE: The contaminants in the explosion cloud contain nitrogen oxides and carbon monoxide (inhalation hazards)

- Allow no one to enter the exclusion zone for 15 minutes if the explosives fail to detonate (wait at least 30 minutes when using fuse caps).

E. HAZARD EVALUATION

Chemical

Although the contents of the cylinder are unknown, it is suspected that the cylinder is empty. The valve fittings on the cylinder appear to be consistent with the fittings used on oxygen cylinders.

Some of the detonation products (ammonia, hydrogen chloride, and nitrogen oxides) are harmful when inhaled or upon contact to the skin and eyes. When inhaled, ammonia causes conjunctivitis, laryngitis, and pulmonary edema or pneumonitis. Upon contacting the skin and eyes, ammonia can cause burns and vesication. When inhaled, hydrogen chloride can cause delayed pulmonary edema, corrosion of mucous membranes of mouth, throat and esophagus, with immediate pain and dysphagia. Upon contact to the skin and eyes, ammonia can cause burns and ulcers. When inhaled, nitrogen oxides react with the water in the lungs causing pulmonary edema.

Premature Detonation

The following factors can cause a premature detonation:

- Static Electricity--All electric blasting caps manufactured in the United States will not detonate from the static charge carried in a

human body. The blasting caps shall remain shunted (electrically connected) until use.

- Induced Current--Radio frequency transmissions, radar, and power lines can detonate electric blasting caps. To counter this, radio and radar use is limited near blasting operations. The cap lead wires shall be wound up until use, and extra wire kept wound up (straight lines make better antennas). The Blaster In Charge shall test any obvious sources of induced current.

- Stray Current--Stray current greater than 0.25 amperes can detonate an electrical blasting cap if a pathway from source to cap is available. Before each detonation, the Blaster In Charge shall check the area for stray current.

NOTE: Blasting will not occur in an area with stray current greater than 0.05 amp.

- Lightning--Lightning can cause blasting caps, high explosives, and blasting agents to detonate. The Site Safety Officer shall evacuate the Demolition Site when there is a good chance of a lightning strike in the area. When using a lightning detector, blasting activities shall cease and personnel shall evacuate the area when a lightning storm is within 5 miles of the site.

- Abuse--The explosives used are very stable with respect to abuse; however, blasting caps are more sensitive. All personnel shall treat blasting caps with extreme care:
  - never bend, crush or mangle a blasting cap
  - never pull the wires of an electric blasting cap
  - all explosives shall be stored and used at temperatures below 150° F.

Misfire

- Checking--The detonation team uses two electric blasting caps to detonate the explosives. The Blaster in Charge shall walk down the blast circuit before detonation, checking for proper connections and placement of explosives. The Blaster in Charge shall also check the circuit for continuity and proper electrical resistance before detonation.

- Power--Incorrect power sources can cause arcing in electric blasting caps. A blasting machine is the only acceptable power source for detonation (delivering >10 amps for <25 milliseconds). Lead wires shall be 20 gauge copper wire with a maximum resistance of 2.5 ohms per 1,000 feet.

Communication

Wind, noise, and distance hamper communication. Radio and radar operation is excluded within the exclusion zone during detonation activities.

F. PERSONAL PROTECTIVE EQUIPMENT

Based on the evaluation of potential hazards, the following levels of personal protection have been designed for the applicable work areas.

Location	Job function	Level of protection
Exclusion zone	detonation	2
	re-entry	1
Support zone	all	none required

Specific protective equipment for each level of protection will be as follows:

Level	Protective clothing
1	helmet with face shield gloves (fire resistant) boots (steel toe and shank)
2	fire resistant coveralls

WARNING - NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SITE SAFETY OFFICER AND THE PROJECT TEAM LEADER.

G. COMMUNICATIONS

Radio communications are forbidden within the exclusion zone. The Project Team Leader shall mark all roads leading to the Demolition Site with "Turn off 2-Way Radio" signs. Personnel in the exclusion zone should remain within sight of the Project Team Leader. All personnel shall exit the exclusion zone and check in with the Project Team Leader after the emergency signal (horn blast).

Field Teams shall use the following standard signals:

Hand gripping throat.....	Out of air - Can't breath
Both hands in air (waiving).....	Need assistance
Thumbs up.....	OK, I am all right, I understand, All-Clear
Thumbs down.....	No, Negative
Horn Blast.....	All personnel assemble at the command post

I. SITE SAFETY AND HEALTH PLAN

The Site Safety Officer, Peggy McCarthy, will conduct pre-job safety reviews and provide safety overview of the project.

The Site Safety Officer is directly responsible to the Project Team Leader for safety recommendations onsite.

The ambulance crew are qualified onsite Emergency Medical Technicians (EMT). KADLEC Medical Center (888 Swift Blvd, city of Richland, telephone number 946-4611, ext. 360) is 15 minutes from the Demolition Site. Because activities will occur after regular business hours, any injured persons will be taken directly to KADLEC Medical Center (for further medical attention). The ambulance crew may use nurses from the Hanford Site during transportation to KADLEC.

Emergency equipment available during the detonation consists of:

- Tanker truck supplying
  - 1,500 gallons of water
  - type B-C fire extinguisher
  - air packs
  - first aid kit.
- Fire engine supplying
  - 300 gallons of water
  - type B-C fire extinguisher
  - air packs
  - first-aid kit.
- Ambulance equipped for basic life support services.
- Command vehicle carrying
  - air packs
  - type B-C fire extinguisher.
- Solid Waste Engineering car carrying
  - protective clothing
  - first-aid kit
  - tools
  - type A-B-C multipurpose fire extinguisher.
- RPD vehicle (used to transport the explosives) carrying two type A-B-C fire extinguishers.
- First-aid equipment is available in the following locations:
  - command post
  - ambulance
  - fire truck

- Emergency telephone numbers (the nearest telephone is onsite):

Agency/Facility	Phone #	Contact
Police/Fire/Ambulance	811	Operator
Hospital (KADLEC)	946-4611, ext. 360	Operator
Industrial Health and Safety	373-1458	D. J. Hart

WARNING - **RADIO AND CELLULAR PHONE USE IS FORBIDDEN WITHIN THE EXCLUSION ZONE.**

Emergency Procedures

Onsite personnel shall use standard emergency procedures and inform the Site Safety Officer of any onsite emergency. The Site Safety Officer is responsible for personnel following the correct procedures.

Detonation Aborted

The Detonation Team shall retrieve the explosives. The Detonation Team shall retain custody of the unused explosives when they leave the site.

Personnel Injury in the Exclusion Zone

Upon notification of an injury in the exclusion zone, sound the emergency signal (horn blast). All site personnel shall assemble at the command post. The rescue team will enter the exclusion zone (if required) to remove the injured person(s). The rescue team will determine the nature of the injury. The onsite EMT shall perform first aid. If necessary, contact the listed medical facility. No one shall re-enter the exclusion zone until the cause of the injury or symptoms is known.

Personnel Injury in the Support Zone

The rescue team will assess the nature of the injury. Activities will continue if:

- The cause of injury is not related to the shock-sensitive/explosive materials or explosives (that is a twisted ankle, cut, or abrasion)
- The person is not essential to the operation.

Activities shall cease if:

- The injury increases the risk to others
- The injury causes a loss of emergency support.

In either case, the onsite EMT shall perform first aid and necessary follow-up as stated previously.

When aborting activities, sound the emergency signal (horn blast). All site personnel shall assemble at the command post for further instructions. Activities onsite will continue when the added risk is removed or minimized.

Fire/Explosion

Sound the emergency signal (horn blast). All site personnel shall assemble at the command post. The fire department shall begin stabilizing the area and Patrol shall move other personnel to a safe distance from the involved area.

Personnel Protective Equipment Failure

Any one experiencing a failure or alteration of protective equipment shall:

- Notify their team members
- Leave the exclusion zone immediately
- Notify Site Safety Officer of the problem
- Reenter the exclusion zone only when equipment is repaired or replaced.

Other Equipment Failure

Inform the Site Safety Officer and the Project Team Leader if any equipment onsite fails to operate properly. The Project Team Leader and Site Safety Officer shall determine the effect of this failure on continuing operations onsite. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the exclusion zone. Personnel may reenter the exclusion zone after an evaluation of the effects of the failure.

When an onsite emergency results in evacuation of the exclusion zone, personnel shall not re-enter until the Site Safety Officer and Field Team Leader:

- Correct the conditions causing the emergency
- Reassess the hazards
- Review the Site Safety Plan
- Brief site personnel on any changes to the Site Safety Plan.

J. APPLICABLE CODES AND STANDARDS

- Chapter 296.52 WAC - Washington State Safety Standards for the Possession and Handling of Explosives

- WAC 296-155-950 through 965, Subpart T - Blasting and the Use of Explosives (Washington State Safety Standards for Construction Work)
- 29 CFR 1910.109, Subpart H - Explosives and Blasting Agents
- 29 CFR 1926.900, Subpart U - Blasting and the Use of Explosives
- NFPA 495 code for Manufacture, Transportation, Storage, and Use of Explosive Materials.